CLAIMS

1. A method of manufacturing a piezoelectric thin film resonator that after forming a piezoelectric film on a substrate so as to cover a lower electrode formed on the substrate, forms an electrode material layer for forming an upper electrode above the piezoelectric film, forms a mask of a predetermined form on the electrode material layer, and then etches the electrode material layer to form the upper electrode,

wherein before a step of forming the electrode material layer, a protective layer for protecting the piezoelectric film during etching of the electrode material layer is formed so as to cover at least a part of the piezoelectric film where the upper electrode is not formed, and the electrode material layer is then formed so as to cover the protective layer.

2. A method of manufacturing a piezoelectric thin film resonator according to Claim 1, wherein the protective layer is formed with silicon oxide (SiO_2).

3. A method of manufacturing a piezoelectric thin film resonator according to Claim 1, wherein the piezoelectric film is formed with zinc oxide (ZnO).

4. A method of manufacturing a piezoelectric thin film resonator according to Claim 1, wherein the electrode material layer is formed with aluminum (Al) or gold (Au).

5. A method of manufacturing a piezoelectric thin film resonator according to Claim 1, wherein the

electrode material layer is etched by wet etching to form the upper electrode.

6. A manufacturing apparatus for a piezoelectric thin film resonator that after forming a piezoelectric film on a substrate so as to cover a lower electrode formed on the substrate, forms an electrode material layer for forming an upper electrode above the piezoelectric film, forms a mask of a predetermined form on the electrode material layer, and then etches the electrode material layer to form the upper electrode,

wherein before the electrode material layer is formed, a protective layer for protecting the piezoelectric film during etching of the electrode material layer is formed so as to cover at least a part of the piezoelectric film where the upper electrode is not formed and the electrode material layer is then formed so as to cover the protective layer.

7. A manufacturing apparatus for a piezoelectric thin film resonator according to Claim 6, wherein the electrode material layer is etched by wet etching to form the upper electrode.

8. A piezoelectric thin film resonator manufactured according to a method of manufacturing a piezoelectric thin film resonator according to any of Claim 1 to Claim 5.

9. An electronic component constructed so as to include a piezoelectric thin film resonator according to Claim 8.